

REMARKS/ARGUMENTS

Upon entry of this Amendment, Claims 1-35 will be pending in the application.

The Examiner's indication that Claims 6, 7, 9, 10, 12, 21-24, 26, 27 and 29 would be allowable if rewritten in independent form is acknowledged with appreciation.

Newly added Claim 32 recites the features of original Claims 1 and 6. It is submitted that Claim 32 is patentable over the prior art of record.

Newly added Claim 33 recites the features of original Claims 1, 8 and 9. In view of the Examiner's indication that Claim 9 would be allowable if rewritten in independent form, it is submitted that Claim 33 is patentable over the prior art of record.

Newly added Claim 34 recites the features of original Claims 1 and 12. In view of the Examiner's indication that Claim 12 would be allowable if rewritten in independent form, it is submitted that Claim 34 is patentable over the prior art of record.

Newly added Claim 35 recites the features of original Claims 17 and 21. In view of the Examiner's indication that Claim 21 would be allowable if rewritten in independent form, it is submitted that Claim 35 is patentable over the prior art of record.

By the present Amendment, independent Claim 1 has been amended to more clearly recite means for cold working the holes to create a compressive stress zone around the holes. Independent Claim 17 has been amended to recite the step of cold working the at least one hole to form a compressive stress zone around the at least one hole. Basis for the "cold working" and "compressive stress zone" language of amended Claims 1 and 17 is provided in the specification, for example, at page 4, paragraphs [0024] and page 8, paragraph [0039]. No issue of new matter is presented.

Claims 1-5, 11, 13-20, 25, 28, 30 and 31 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 4,885,836 to Bonomi et al. According to the Office Action, Bonomi et al. '836 discloses a drilling step (Figs. 3-8) and a hole-prepping step (Figs. 9-12) before rivet installation. According to the Office Action, Bonomi et al. '836 teaches machining a workpiece (drilled) and then working the machined hole (Figs. 9-12) and finally providing means at R1 and R2 (robots) for automatically aligning the hole-prepping tool (50) with the machined holes of the workpiece. The Office Action acknowledges that Bonomi

et al. '836 does not teach hole preparation in the form of cold working or deforming. The Office Action further states that Bonomi et al. '836 teaches a rotary tool (55, 56) for prepping the hole, and states that it is well known to drill and coin (or otherwise deform a hole) to finish a hole preparatory for an assembly operation. According to the Office Action, it would have been an obvious choice to one skilled in the art to have provided the second step of finishing the hole by way of deformation in lieu of using a rotary tool.

Applicant respectfully submits that Claims 1 and 17, as amended, are patentable over Bonomi et al. '836. As recited in amended Claim 1, the automatic cold working system includes means for automatically aligning a mandrel of a mandrel assembly with the holes of a workpiece and a surface of the workpiece and cold working the holes to create a compressive stress zone around the holes. Similarly, amended Claim 17 recites a method of automatically cold working holes in a workpiece including the step of cold working the at least one hole to form a compressive stress zone around the at least one hole. Thus, amended Claims 1 and 17 do not merely recite prepping or finishing a hole, but rather recite a cold working step in which a compressive stress zone is formed around each hole. The resultant compressive stress zone around the hole causes an increase in hardness and improves fatigue resistance of the material.

Bonomi et al. '836 teaches the steps of drilling, deburring and rivet installation. As shown in Figs. 9-12 of Bonomi et al. '836, a deburring tool 58, 59 is used to prepare a previously drilled hole (see column 8, lines 21-62). The deburring step taught by Bonomi et al. '836 is distinct from the presently claimed cold working step and would not result in the formation of a compressive stress zone as presently claimed. One skilled in the art would not be lead by the teachings of Bonomi et al. '836 to replace the deburring step disclosed by the reference with the presently claimed cold working means or step in which a compressive stress zone is formed around each hole. Accordingly, it is submitted that the combinations of features recited in Claims 1 and 17 are patentable over Bonomi et al. '836.

In view of the foregoing amendments and remarks, it is submitted that Claims 1-35 are patentable over the prior art of record. Accordingly, an early Notice of Allowance of this application is respectfully requested.

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In the event that any outstanding matters remain in connection with this application, the Examiner is invited to telephone the undersigned at (412) 263-4340 to discuss such matters.

Respectfully submitted,



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